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## PLUMBING SPOUT DEVICE

5 The invention relates to a plumbing spout device with a mounting sleeve, which is connected to the water spout of a plumbing spout fitment via a screw, clip, detent, adhesive, or weld connection, as well as with a jet-regulating device, with an attachment screen being connected upstream of this jet-regulating device in the direction of flow  
10 and with the jet-regulating device being embodied as a perforated plate, which has a perforated area at least in a partial region.

In order to shape the water flow through a plumbing spout fitment into a homogeneously soaking, non-spraying water jet, various known spout  
15 devices have already become known.

Devices that are already known here include a jet disrupter, which can be inserted into the spout nozzle of a spout fitment and which has several radial walls, which are arranged in the shape of a star relative  
20 to each other and with their flat sides parallel to the direction of flow. However, these previously known jet disrupters cannot satisfy high demands for the jet flow quality.

Therefore, jet regulators have also been created, which have a jet  
25 splitting device formed as a perforated plate. In this jet splitting device, the incoming water flow is split into many individual jets. The individual jets, that can still be aerated if necessary, are then combined

in a jet-regulating device connected downstream in the direction of flow back into the desired homogeneous, bubbling, and non-spraying complete jet. Here, the jet-regulating device can also be formed as a perforated plate having a honeycomb-like perforated field at least in a partial area.

In order not to negatively affect these functional units which are connected one after the other, the jet splitting device and also the subsequent jet-regulating device, due to contaminant particles entrained in the water flow, the jet splitting device can have an attachment screen connected upstream.

Thus, from DE 101 49 335 A1, a jet regulator with a sleeve-shaped housing is already known, in which several jet-regulating devices are provided. Here, several additional jet-regulating devices, which have a wire-mesh form and whose mesh is formed from fine, crossing members, are arranged on the outflow side of a jet-regulating device formed as a perforated plate. An attachment screen, which covers the supply-side front end of the sleeve-shaped housing, is connected upstream of these jet-regulating devices. Such an attachment screen, which can be connected upstream of a jet regulator in the direction of flow, is already known from DE 43 33 549 A1.

These previously known jet regulators distinguish themselves through a high jet quality and a good jet pattern of the complete jet that is produced. However, these previously known jet regulators have a large installation height, which considerably limits the possibilities for

shaping the associated plumbing spout fitment, due to the various functional units connected one after the other.

- From US-A-3 630 455 a plumbing spout fitment with a two-part mounting sleeve is known, which can be screwed into a corresponding internal thread on the water spout of a plumbing spout fitment with an external thread on the outflow-side sleeve part. In the interior space enclosed by the two sleeve parts of the mounting sleeve, a pot-shaped jet-regulating device is provided, whose pot bottom is embodied as a perforated plate with a perforated area. An attachment screen is connected upstream of this jet-regulating device in the direction of flow. In order to be able to house the pot-shaped jet-regulating device in the inner space enclosed by the two sleeve parts, the jet-regulating device is arranged approximately in the middle of the mounting sleeve. However, the multiple-part arrangement of the previously known spout device, the two-part construction of the mounting sleeve, and also the pot-shaped jet-regulating device housed therein require a relatively large installation length of the previously known spout device.
- From CH-A-380 042, a spout fitment is known, in whose water spout a jet regulator can be inserted. This jet regulator has a mounting sleeve, which has an outflow-side jet-regulating device formed from several metal screens arranged one on top of the other. Since these metal screens have a relatively small longitudinal extent, these must be held at a slight distance from each other and the screen edge must be flanged as a spacer. Another metal screen is connected on the supply side as an attachment screen upstream of the jet-regulating device

formed from several metal screens. This previously known spout device also has many parts and is relatively long.

From DE 200 10 099 U1, a similarly designed jet regulator is known,  
5 which can be inserted into a spout nozzle that can be mounted on an internal thread on the water spout of a plumbing spout fitment. However, the spout nozzle required for mounting the previously known jet regulator negatively affects the aesthetic appearance of the plumbing spout fitment and significantly restricts the possibilities for  
10 its design.

Therefore, there is the objective of creating a plumbing spout device of the type named above, which distinguishes itself through a high jet quality and a good jet pattern and which nevertheless leaves room open  
15 for possibilities in shaping the spout fitment.

This objective is achieved according to the invention in that, for the spout device of the type named above, the outflow-side jet-regulating device is arranged on the spout-side sleeve end region of the mounting sleeve and the jet-regulating device is formed in one piece on the  
20 mounting sleeve.

The spout device according to the invention has a mounting sleeve, which carries the attachment screen and a jet-regulating device. While the jet-regulating device is connected in one piece to the mounting  
25 sleeve on the spout-side sleeve end region of the mounting sleeve, the attachment screen is connected upstream in the region of the supply-side sleeve end region of the jet-regulating device in the direction of

flow. Therefore, the spout device according to the invention can be embodied with a relatively small installation height, without negatively affecting the jet quality significantly.

- 5 To influence the jet quality even more favorably, it can be advantageous when a screen-like or grating-like insert part or a similar functional element is connected between the attachment screen and the jet-regulating device.

However, a preferred embodiment according to the invention provides  
10 that an attachment screen is connected directly upstream of the jet-regulating device without other insert parts or functional units being connected in-between. Surprisingly, it has been shown that the jet-regulating device connected downstream of the attachment screen in the direction of flow and having a perforated area in at least a partial  
15 region is already adequate for producing a homogeneously soaking and non-spraying water jet. In the spout device according to the invention, since many different functional units can be eliminated and since the spout device according to the invention is composed essentially of only the preferably plate-shaped jet-regulating device and the attachment  
20 screen connected upstream, the spout device according to the invention has a relatively small installation height. Due to its small installation height, the spout device according to the invention leaves room open for possibilities in the design of the associated spout fitment.

- 25 An especially simple and preferred embodiment according to the invention provides that the mounting sleeve carries an external thread,

which can be screwed into an internal thread on the water spout of the plumbing spout fitment.

5 The spout device according to the invention can present its special advantages primarily when the volume flow through the spout fitment is not too large. In order to keep the water flow through the spout device according to the invention to a preferred volume, it is advantageous when a flow rate regulator or a flow rate limiter is connected upstream of the attachment screen in the direction of flow.

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The small installation height of the spout device according to the invention is preferred when the attachment screen, at least with its outer edge region, directly contacts the supply side of the jet-regulating device. Here, a preferred embodiment according to the invention provides that the attachment screen has a conical shape. For a conically shaped attachment screen, contaminant particles possibly entrained in the water flow can be deposited on the outer edge region of the attachment screen, without significantly restricting the screening area of the attachment screen.

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The high jet quality and the perfect jet pattern of the spout device according to the invention is promoted when a neck in the housing is connected after the jet-regulating device for forming a jet on the outlet end of the spout device.

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It is possible that the jet-regulating device is connected to the mounting sleeve via a weld, adhesive, clip, or screw connection. However, a

preferred embodiment according to the invention provides that the jet-regulating device is formed in one piece on the mounting sleeve.

Here, it is especially advantageous when the jet-regulating device  
5 formed on the mounting sleeve and/or the attachment screen is formed as a plastic part.

To be able to insert the relatively flat spout device into the associated spout fitment, it is advantageous when the spout device has a  
10 contoured outer outline and/or a contoured outflow end side, which is embodied as a tool attachment surface for a tool insert. Here, the contoured outer outline or the contoured outflow end side of the spout device according to the invention can also be arranged on its mounting sleeve.

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An especially advantageous embodiment according to the invention provides that the outflow end side of a spout device has contouring formed from end projections and recesses, such that the recesses of a spout device held in a spout fitment act as a tool attachment surface for  
20 the projections of another spout device that can be used as a tool insert. Thus, the spout device held in the spout fitment can be unscrewed with another spout device, which is complementary at least externally or has the same structure and which is used here as a tool insert and is designed for replacement. The spout device initially used as a tool insert can then be  
25 screwed into the water spout of the spout fitment with the help of the spout device which was previously removed from the spout fitment. In this particularly advantageous embodiment according to the invention, no additional tool inserts are necessary.